Addendum to the July 1997 MassGIS Datalayer Description Guide

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MASS GIS — *Massachusetts Geographic Information System*

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One of the most important functions of the MassGIS staff is to maintain and expand the digital database. Spatial data are constantly changing and new data sources become available. The following section describes changes to existing datalayers, new data layers now available, and active data development projects.

New Datalayers

Soils: A soils datalayer has been automated from the USDA Natural Resources Conservation Service (NRCS) 1:25,000 published soil surveys. All soils data released by MassGIS have been "SSURGO-certified," which means they have been reviewed and approved by the NRCS and meet all standards and requirements for inclusion in the national release of county-level digital soils data. Soils data are currently available for Norfolk and Suffolk counties and Hampden/Hampshire East. This datalayer will be under development until complete coverage exists across the state. Current status maps are available on the MassGIS web site.

Zoning: Zoning District data are now available for many communities across the Commonwealth. These data were obtained mostly through the Regional Planning Agencies and the Central Transportation Planning Staff. Some zoning coverages came from the Essex County Registry of Deeds and others were digitized at MassGIS using town zoning maps and, where available, the 1:5,000 digital orthophotos. This datalayer will continue to grow. Current status maps are available on the MassGIS web site.

Water Quality Monitoring Stations: The Mass. DEP Division of Watershed Management (DWM) has compiled this datalayer representing points on rivers, ponds, and lakes where water-quality samples were taken by DWM staff during 1995 and 1996. Most station locations were chosen to support the environmental monitoring phase of the Massachusetts Watershed Initiative. New stations will be added as additional watersheds complete this phase and the related monitoring data pass the DWM quality-control/quality-assurance checks.

MBTA Rapid Transit and Trains: The Central Transportation Planning Staff has provided MassGIS with one new datalayer - MBTA Rapid Transit - which includes the four subway and streetcar "T" lines (Blue, Green, Orange, Red), and one updated datalayer - Trains - which now includes the MBTA Commuter Rail lines as well as other attribute information.

Color Orthophotography: Due to a cooperative effort between the Massachusetts Coastal Zone Management Office, the NOAA Photogrammetry Division, and the National Geodetic Survey, 1-meter resolution color orthophotographs are now available for most of the coastal zone region of Massachusetts.

USGS Orthophotography: USGS 1:12,000 black and white digital orthophoto images are available for Franklin County and portions of the south shore and Northern Middlesex regions. The original images were post-processed by MassGIS to conform to the same tiling scheme and projection as the MassGIS 1:5,000 black and white orthophotos. These images will serve as the orthophoto base for this region until the 1:5,000 orthos from the Executive Office of Environmental Affairs' orthophoto mapping project are available.

Nautical Datalayer: The nautical datalayer was developed for the Massachusetts Coastal Zone Management (MCZM) program. It contains 25 feature layers from NOAA nautical charts. Only features represented on the charts by line work were extracted into this arc coverage. Aids to navigation and bathymetry were not compiled.

Cape Cod Commission Datalayers: Two new data libraries - CAPE and CAPETOWN - are available comprised of data that MassGIS received from the Cape Cod Commission. These data layers were created primarily to support the Commission's Regional Policy Plan and Local Comprehensive Plans with each of the 15 towns on Cape Cod.

Major Roads: A new statewide major roads datalayer has been developed from the Massachusetts Highway Department Roads datalayer. This new datalayer (MAJRDMHD) replaces the old DLG-based MAJ_RD datalayer. Two new datalayers which accompany MAJRDMHD are MHDRDPTS - a point coverage for plotting route shields - and EXITS - a point coverage with the location and ID number of major highway interchanges.

Datalayer Changes

Enhanced Hydrography: Nearly half of the quadrangles in Massachusetts are available as 1:24,000/1:25,000 USGS DLG hydrography. For the remainder of the state, the enhanced 1:100,000 USGS DLGs are being replaced by vectorized USGS 1:25,000 scanned blue color separates. Work is currently underway in the Connecticut, Taunton and Buzzards Bay basins.

Protected and Recreational Open Space: MassGIS is currently updating its state and federal lands datalayer with additions of municipal, nonprofit, and private conservation and recreational lands and facilities.

Towns: An areacode table has been added to the Towns coverage. This table stores telephone area codes for each Massachusetts municipality and reflects the two new area codes (978, 781) added on September 1, 1997.

TIGER Streets: Street name annotation has been added to the TIGER street linework.

TIGER Polygon and Census Block Groups: These datalayers are no longer being distributed by MassGIS due to the presence of many sliver polygons and data errors. MassGIS will continue distributing these layers once the errors have been corrected.

DEP Solid Waste Facilities: DEP has added over 30 new facilities to the datalayer. In addition the location of certain existing facilities were updated using scanned USGS quads as a background cover. Finally, coding changes have been made to reflect more current facility information.

Transportation: The former transportation datalayer has been split into two separate layers: Trains (railroad lines including the MBTA Commuter Rail lines) and Transmission Lines (pipelines, transmission lines, and miscellaneous transportation features from the USGS Digital Line Graphs).

1:5,000 Black and White Digital Orthophotography: New black and white orthophotos are available for the Merrimack Valley region and the North Shore coastal area including Swampscott, Salem, Marblehead, Manchester, Essex, Gloucester, and Rockport. Gaps have been filled in the Acton/Concord and Sudbury/Maynard areas. New orthophotos are also available for much of the Taunton Watershed in Southeastern Mass. Because this datalayer is continually expanding, it is recommend that you check the 1:5,000 Orthophoto status map on the MassGIS web site for the most up to date information.

1:5,000 Wetlands: The outer Cape now has complete coverage of the 1:5,000 Orthophoto Wetlands datalayer which nearly completes the entire Cape. New wetlands are also available in the North Shore area. Because this datalayer is continually expanding, it is recommend that you check the 1:5,000 Wetlands status map on the MassGIS web site for the most up to date information.

1:5,000 3-Meter Contours: The area covered by the new 1:5,000 orthophotos is now covered by 1:5,000 DTM-derived 3-meter topographic contours. Because this datalayer is continually expanding, it is recommend that you check the 3-meter Hypsography status map on the MassGIS web site for the most up to date information.

MHD and 100K Roads: The Massachusetts Highway Department (MHD) Roads datalayer now represents the combined linework of the MassGIS 1:100,000 Roads datalayer and supplemental linework provided by the Massachusetts Highway Department. The old 1:100,000 DLG-based Roads datalayer has been dropped from the MassGIS library.

Current Data Initiatives

Statewide Digital Orthophotography: EOEA is continuing the development of statewide digital orthophotographs. EOEA digital orthophotos are 1:5,000 black and white images with an accuracy of 3 meters. Outside of the densest communities in Massachusetts, the 1:5,000 scale images may serve as a useful base map for compiling parcel boundaries, wetlands and other information, conducting preliminary screenings of site suitability, and other environmental analyses. The ancillary Digital Elevation Model (DEM) is also available which MassGIS uses to generate 3 meter contour data. Currently MassGIS is working with the Mass Highway Department to interpret 1:5,000 road centerlines. In addition data compiled from other sources are being re-compiled onto the orthos. These layers include wetlands, zoning and soils. See descriptions of each of these projects for more information. Orthophoto images are available in .5, 1, 2 and 5 meter resolution. Images for Metropolitan Boston, the North Shore, Merrimack Valley, most of the Cape, the Taunton Watershed, and the Quabbin, Ware, Wachusett and Sudbury Reservoirs are currently available. EOEA hopes to complete this statewide mapping program within the next 3-4 years. A current status map is available on the MassGIS web site (http://www.state.ma.us/mgis).

Stream Network Centerlines: Work is underway to derive a single-line centerline network on the 1:25,000 hydrography. True single-line features (such as streams or canals) are supplemented by GRID-derived centerlines which flow through polygon features (ponds, wetlands, doublewide streams, etc). This network representation of basins allows for analysis and querying to answer upstream/downstream and other hydrologic or basin-oriented questions. A route-system will be in place on the network with complete coding of the existing SARIS coding scheme.

Wetlands: Wetlands data for 26 classes of wetlands are being interpreted from 1:12,000 scale color-infrared photography and recompiled onto 1:5,000 scale black and white digital orthophotography. Interpretation is performed at the University of Massachusetts at Amherst and field checked by the Department of Environmental Protection. Data are currently available for the Wachusett and Ware watersheds, Fort Devens area, portions of the Metropolitan Boston area, the North Shore, and Cape Cod. Coverages for additional areas are in production. A current status map is available on the MassGIS web site (http://www.state.ma.us/mgis).

Soils: The Massachusetts Department of Food and Agriculture (DFA) has funded development of a statewide soils datalayer. DFA and MassGIS staff are scanning and vectorizing soil survey maps (ranging in scale from 1:15,840 to 1:25,000) published by the Natural Resource Conservation Service (formerly Soil Conservation Service) of the U.S. Department of Agriculture. DFA is editing and coding the coverages with soil type and slope as represented on the soil survey maps. Soils data are currently available for Norfolk and Suffolk counties and Hampden/Hampshire East. Production began in December 1995 and is expected to conclude within two years.

Municipal Zoning: MassGIS is collecting and compiling municipal zoning districts and bylaws. MassGIS has collected zoning coverages developed by the Executive Office of Transportation and Construction (EOTC), the Regional Planning Agencies, and the Essex County Registry of Deeds. Others were digitized at MassGIS using town zoning maps and, where available, the 1:5,000 digital orthophotos. Unique municipal zoning codes have been preserved and a regional zoning attribute scheme was developed to facilitate regional analysis. Data scale and accuracy are variable.

Soils Datalayer
March 1999

OVERVIEW

The soils datalayer has been automated from 1:25,000 published soils surveys as provided on various media by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). All soils data released by MassGIS have been "SSURGO-certified," which means they have been reviewed and approved by the NRCS and meet all standards and requirements for inclusion in the national release of county-level digital soils data. Soil survey areas are roughly based on county boundaries and the soils datalayer is stored in the QUAD2 library as 2 coverages per 7.5 minute USGS quadrangle. The SOILS layer (coverage SOI) contains the soil polygons; the SOILSPOT layer (coverage SPO) contains the special and ad hoc features.

This data set is not designed for use as a primary regulatory tool in permitting or siting decisions, but may be used as a reference source. This information may be interpreted by organizations, agencies, units of government, or others based on needs, however they are responsible for the appropriate application. Federal, state, or local regulatory bodies are not to assign to the NRCS any authority for the decisions that they will make. The NRCS will not perform any evaluations of these maps for purposes related solely to state or local regulatory programs.

Maps that use NRCS SSURGO data must show the source (NRCS) and date and, space permitting, contain the following notation:

> **"This Soil Survey Geographic (SSURGO) data base was produced by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies for the Soil Survey of _____ County, (state). The soils were mapped at a scale of _____ with a _____ acre minimum size delineation. Enlargement of these maps to scales greater than that at which they were originally mapped can cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soil that could have been shown at a larger scale. The depicted soil boundaries and interpretations derived from them do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only. Digital data files are periodically updated. Files are dated, and users are responsible for obtaining the latest version of the data."**

Specifics for each survey area can be found in the 'meta<survey_area>.txt' files that MassGIS distributes with all SSURGO data. The <survey_area> is an abbreviated county name, e.g. 'HHEA' for the Hampden-Hampshire East survey area (comprising the eastern portion of Hampden and Hampshire Counties).

PRODUCTION

Source materials vary by survey area and include scribecoat, clear film positives, and half-tone mylars containing soil lines as well as labels and cultural features. Source sheets to date contained data by "third-quad," a standard NRCS tiling scheme for its published surveys which splits a USGS quadrangle into three sections (north, central and south). Each survey done to date has been based on 1:25,000 orthophoto base maps. Source mylars were scanned at a resolution of 500 dots per inch. The scanned images were registered, rectified, and converted to grids using ARC/INFO. Soils linework was extracted from the grids in the ARC/INFO GRID module and vectorized. MassGIS completed all processing from scanning through vectorization. Map neatline development, line smoothing, labeling, edge matching, and merging of third-quads into full 7.5 minute quads was done by Massachusetts Department of Food and Agriculture staff. Special and ad hoc features such as rock outcrops or stripped land areas that are smaller than the original NRCS minimum mapping units were manually digitized by DFA. These features were captured

due to their uniqueness in their surroundings and are represented as point and line data because they are too small to be shown as area features at the scale of mapping. They form a coverage (SPOT) separate from the soil area delineation. Mass DFA staff performed all quality checking prior to submittal for SSURGO certification. The NRCS Missouri Digitizing Unit reviewed the soil coverages and special and ad hoc features for adherence to Soil Survey Geographic (SSURGO) database standards. Once SSURGO certified by the Missouri Unit, MassGIS added annotation classes to the SOILS coverages. ANNO.CODE comprises the CODE item, ANNO.STATELEG the STATELEG item. In Arcplot use TEXTSET FONT to display the annotation.

ATTRIBUTES

Each SOI.PAT contains the following items:

CODE	The soil map unit that appears in the published soil survey. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils.
SS_AREA	Code for soil survey area
STATELEG	The corresponding code from the statewide legend. Published soil surveys vary in coding schemes and the statewide legend assigns one symbol to a soil map unit across the state.
SLOPE	Slope of the landscape, derived from the last character of the STATELEG item, if present Possible SLOPE codes are: A: 0-3% B: 3-8% C: 8-15% D: 15-25% E: 25-35% 0: Water or urban land (no slope)
SS_CODE	A unique value that contains both the CODE and the soil survey area item (SS_AREA) as a redefined item.

Each SOI.AAT contains the following items:

BOUNDARY	The boundaries of the soil survey area are coded as >SS_SURV= and arcs representing USGS Quad tile boundaries are coded as >QUAD.=
TYPE	Source of linework for lines added or edited after scanning during production. Possible TYPE codes are: SOIL: from scan DIGITI: digitized on screen or with tablet TOWNS: USGS town line used instead of NRCS polygon boundary

Each special/ad hoc feature SPO coverage contains a .PAT and .AAT that contain the following items:

CODE	Internal code used during production.
LABEL	contains a three or four letter code representing the special or ad hoc feature description.
MAJOR	contains a numeric code representing a feature category based on USGS major code categories.
MINOR	contains USGS/NRCS codes that define nodes, areas, lines, and points.

Annotation was created for all soils polygons based on the >CODE= item in the .PAT.

RELATED DATABASE FILES

Map Unit Delineations are described by the Map Unit Interpretations Record data base. This attribute data base gives the proportionate extent of the component soils and the properties for each soil. The data base contains both estimated and measured data on the physical and chemical soil properties and soil interpretations for engineering, water management, recreation, agronomic, woodland, range, and wildlife uses of the soil. This data base consists of the following relational tables developed by the NRCS:

SOILS.COMP (map unit component) - stores information on soil map unit components
SOILS.COMPYLD (component crop yield) - stores crop yield information for soil map unit components
SOILS.FOREST # (forest understory) - stores information for plant cover as forest understory for soil map unit components
SOILS.HELCLASS (highly erodible lands class) - stores the highly erodible land classification for wind and water assigned to the soil map units
SOILS.HYDCOMP (hydric component information) - stores data related to the hydric classification, criteria, landform, etc.
SOILS.INCLUSN (map unit inclusion) - stores the names of soils included in the soil map units
SOILS.INTERP (interpretation) - stores soil interpretation ratings (both limitation ratings and suitability

ratings) for soil map unit components
SOILS.LAYER (soil layer) - stores characteristics of soil layers for soil map unit components
SOILS.MAPUNIT (map unit) - stores information that applies to all components of a soil map unit
SOILS.MUCOACRE (map unit county acres) - stores the number of acres for the map unit within a county
SOILS.MUYLD (map unit yield) - stores crop yield information for the soil map unit
SOILS.PLANTCOM # (plant composition) - stores plant symbols and percent of plant composition associated with components of a soil map unit
SOILS.PLANTNM * (plant name) - stores the common and scientific names for plants used in the data base. Relates to SOILS.PLANTCOM on the 'PLANTSYM' item.
SOILS.RANGENM * (range name) - stores the range site names (table not populated). Relates to SOILS.RSPROD on 'RSID'.
SOILS.RSPROD # (range site production) - stores range site production information for soil map unit components
SOILS.SSACOAC * (soil survey area county acreage) - stores the acreage for the county within the boundary of the soil survey area. Relates to SOILS.MAPUNIT by the 'STSSAID' item and to SOILS.MUCOACRE on the 'CNTYCODE' item.
SOILS.SSAREA * (soil survey area) - stores information that will apply to an entire soil survey area. Relates to SOILS.MAPUNIT and SOILS.SSACOAC on the 'STSSAID' item.
SOILS.TAXCLASS * (taxonomic classification) - stores the taxonomic classification for soils in the data base. Relates to SOILS.COMP on the 'CLASCODE' item.
SOILS.WINDBRK # (windbreak) - stores information on recommended windbreak plants for soil map unit components
SOILS.WLHABIT (wildlife habitat) - stores wildlife habitat information for soil map unit components
SOILS.WOODLAND (woodland) - store information on common indicator trees for soil map unit components
SOILS.WOODMGT (woodland management) - stores woodland management information for soil map unit components
SOILS.YLDUNITS * (yield units) - stores crop names and the units used to measure yield. Relates to SOILS.MUYLD on the 'CROPNAME' item.

These INFO tables relate to the coverage .PATs on the item 'STATELEG,' which uniquely identifies a soil map unit across the state. The INFO file **SOILS.PRL** contains the relates for the 17 INFO files above containing the 'STATELEG' item. Table names with the '*' symbol above do not have direct links to the .PATs; these tables are related to other tables on other items as indicated in the specific descriptions above. MassGIS added the STATELEG item to each of these tables with the pre-existing item MUID (Mapunit Identification Symbol), which is a concatenation of the soil survey area id and the state legend code. The STATELEG item makes it possible to link to these relational tables regardless of survey area. The tables indicated with a'#' symbol above are part of the standard NRCS SSURGO release but deal with crops that don't occur in New England and thus are not populated.

One additional non-relational table provides further information:
SOILS.CODES (data base codes) - stores information on all codes used in the data base

The following table provides descriptions of the codes used in the SPOT coverages:
SOILS.FEATURES (special feature codes) - stores information on all codes used in the special feature 'SPOT' coverages

Items in the **SOILS.FEATURES** table:

FEAT_LABEL	Three-character code for special feature
FEAT_NAME	Name of special feature
FEAT_DESC	Full description of special feature

For lists and descriptions of the codes in all of the other tables, please refer to the section "Data base schema" and to Appendix A in the Soil Survey Geographic (SSURGO) Data Base users guide, available

as a .pdf (portable document format) file (requiring Abobe Acrobat Reader) from MassGIS or on the world wide web at http://www.ftw.nrcs.usda.gov/ssur_data.html.

EDITING

Checkplots were made by DFA and reviewed by NRCS staff at various times during the editing process. NRCS soil scientists edgematched each survey area to all abutting surveys (including those in adjacent states) and these edits were incorporated into the quad coverages. Mylar checkplots were provided to NRCS for compilation of special and ad hoc features that were digitized by DFA staff. Each quad within the survey area was submitted to the NRCS Missouri Digitizing Unit for SSURGO review and these edits were incorporated in the final datalayer.

MAINTENANCE

This datalayer is maintained by DFA. Additional survey areas will be added as they become available. A current status map is at the MassGIS world wide web site at http://www.state.ma.us/mgis.

ADDITIONAL REFERENCES

Further information is available in the form of documents produced and maintained by the NRCS. These documents include:

The National Soil Survey Handbook, a multi-chapter guide that provides the main operational and procedural guidance for the soil survey program. All Handbook chapters are available for download in Microsoft Word 6.0 format on the web at http://www.statlab.iastate.edu/soils/nssh/. MassGIS will distribute a digital copy of this handbook (in Microsoft Word format) with the soils data.

The Soil Survey Manual, a single volume book which provides the major principles and practices needed for making and using soil surveys and for assembling and using data related to them. The Manual is intended primarily for use by soil scientists engaged in the classification and mapping of soils and in the interpretation of soil surveys. Although the Manual is oriented to the needs of those actively engaged in preparing soil surveys for publication, workers and students who have limited soils experience or are less familiar with the soil survey process also will be able to use the information. The Manual may be viewed in HTML format on the web at http://www.nhq.nrcs.usda.gov/JDV/ssmnew/gen_cont.html.

The Soil Survey Geographic (SSURGO) Data Base, often referred to as the "SSURGO Data Users Guide" or "data dictionary," provides data use information for users of SSURGO data. The Data Base contains detailed descriptions of the relational tables, including the definitions of soil data elements, definitions of the soil data codes, and a value table. Included are SSURGO attribute relational data base schema. The Data Base also discusses SSURGO map development, data collection, data structure, data voids, map hard copy production, user support, and distribution. This document is available for download as a .pdf (portable document format) file on the web at http://www.ftw.nrcs.usda.gov/ssur_data.html. This file also is distributed with all SSURGO data from MassGIS.

Zoning Datalayer
September 1998

OVERVIEW

The MassGIS zoning datalayer represents the boundaries of municipal zoning districts. Because zoning is established at the municipal level, there is no standard classification of zoning districts across the state. While districts in different communities may have similar or even identical names, their definitions are often quite different. Generalized codes have been added to make these data useful for regional display. A related table contains detailed information about the districts such as setbacks or text descriptions from each community's zoning bylaws.

Though originally processed by municipality, the zoning coverages are tiled by USGS quad because many of these data do not conform exactly to the MassGIS TOWN library index due to scale differences and boundary anomalies. Stored in the QUAD2 library in the **ZONING** layer, the zoning coverages are named **ZN**.

This data layer is under development, and many communities are not yet available.

Zoning district boundaries change frequently and we have no process in place to regularly update these coverages. These data should therefore be used for regional analysis only and not as official zoning maps. The municipality's own official zoning map and current copy of the by-law should be considered as the final word on zoning boundary questions or issues.

PRODUCTION

MassGIS received zoning coverages for many towns and cities in Eastern Massachusetts from the Central Transportation Planning Staff (CTPS) in 1993. Many of these coverages have since been updated by the Regional Planning Agencies (RPAs) and forwarded to MassGIS. Other communities not processed by CTPS were digitized by the RPAs from community-supplied zoning maps (at various scales). There are also a few communities (Salem, Beverly, Middleton and Gloucester) that were digitized by the Essex County Registry of Deeds.

MassGIS staff have digitized some additional communites where 1:5000-scale orthophotography was available. Zoning maps for these communites were scanned and georeferenced to the orthophotography. District boundaries aligned to or offset by a known distance from identifiable features were edited with reference to the orthophoto. In some cases, coverages from other sources also went through this editing process. Eventually, all coincident features and offsets in the zoning data layer will be referenced to the orthophoto, but given the utility of these data in regional and watershed planning we have decided not to wait for that extra processing to be complete before releasing the data.

ATTRIBUTES

MassGIS used a workstation version of ARC/INFO to combine data from different communities into a quad-tiled library (QUAD2) with a standard ARC/INFO Polygon Attribute Table (**ZN.PAT**). A related table (**ZN.BYLAWS**) contains dimensional requirements for zoning districts. This table is related by the **ZONECODE** field.

Items in **ZN.PAT**

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
1	AREA	8	18	F	5	-
9	PERIMETER	8	18	F	5	-
17	ZN#	4	5	B	-	-
21	ZN-ID	4	5	B	-	-
25	TOWN-ID	3	3	I	-	-
28	TILE-NAME	3	3	C	-	-
31	ZONECODE	10	10	C	-	ZC
41	PRIMARYUSE	2	2	I	-	PU
43	LANDUSE	1	1	I	-	LU
44	LASTEDITED	8	8	I	-	-
52	SOURCE	7	7	C	-	-

ZONECODE is the district zoning code, a concatenation of town-id and abbreviation from the zoning maps. For example, a Residential A District in Weston (town-id 333) might be coded 333RES A or 333RA depending on what abbreviations the zoning map uses. If no abbreviations appear on the map then MassGIS assigned abbreviations to the districts. **PRIMARYUSE** is a code used to generalize zoning districts into a statewide, standardized format. **LANDUSE** is a more generalized version of this coding. These codes were developed to facilitate looking at these data across community boundaries.

Primary Use codes:
1 - Single Family Residential
2 - Multi-Family Residential
3 - Residential/Agricultural Mix
4 - Other Residential
5 - Neighborhood Business
6 - Highway Business
7 - Central Business District (CBD)
8 - Office Park
9 - Other Business
10 - General Industrial
11 - Light Industrial
12 - Medical Services
13 - Institutional
14 - Conservation/Recreation
15 - Mixed Use (no dominant use)
16 - Research Park
17 - Village Business
18 - General Business
19 - Other

Land Use codes:
1 - Residential
2 - Commercial
3 - Industrial
4 - Restricted (includes open space and protection overlay dists.)
5 - Other

LASTEDITED is the date of latest editing in numerical format (i.e. 19981002 for Oct. 2, 1998). **SOURCE** is the source of the data. If digitized from a community's zoning map, the source will be listed as "TOWN". For a more complete listing of sources of features and attributes by community, consult the source table **ZN.PSC** in the library's database directory.

Items in **ZN.BYLAWS**:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE
1	ZONECODE	10	10	C
11	CODE	7	7	C
18	ZONEDIST	40	40	C
58	MINLOTSIZE	8	11	F
66	MINFRONT	8	11	F
74	ML_TSVCS	8	11	F
82	ML_NSVCS	8	11	F
90	ML_1FAM	8	11	F
98	ML_2FAM	8	11	F
106	ML_XFAM	8	11	F
114	MLXBYUNIT	8	11	F
122	ML_SIT1	8	11	F
130	ML_SIT2	8	11	F
138	MF_TSVCS	8	11	F
146	MF_NSVCS	8	11	F
154	MF_1FAM	8	11	F
162	MF_2FAM	8	11	F
170	MF_XFAM	8	11	F
178	MF_SIT1	8	11	F
186	MF_SIT2	8	11	F
194	FAR_MAX	4	6	F
198	BLDCOV_MAX	4	6	F
202	LOTCOV_MAX	4	6	F
206	MAXHEIGHT	8	11	F
214	MAXSTORIES	4	4	F
218	SETBACK_F	8	11	F
226	SETBACK_SD	8	11	F
234	SETBACK_R	8	11	F
242	COMMENTS1	30	30	C
272	COMMENTS2	30	30	C
302	COMMENTS3	30	30	C

ZONECODE links this table to the **ZN.PAT**s in the library. **CODE** is the district's abbreviation from the zoning map. This field is also used to create annotation. **ZONEDIST** is a full descriptive

name of the zoning district. **ML** is the minimum lot size and **MF** is minimum frontage. There are many ways that communities break down these requirements and some of the more common ones are represented by attributes in the tables. For example, a district may have a minimum frontage of 40 feet for single-family homes but only 35 feet for two-family and multi-family units. In this instance **MF_1FAM** = 40, **MF_2FAM** and **MF_XFAM** = 35. **MLXBYUNIT** is for cases when lot size is specified as per number of housing units. For any other situation, one can use the **ML_SIT1** or **ML_SIT2** fields and describe SIT1 in **COMMENTS1** and SIT2 in **COMMENTS2**. **SETBACK**s (front, side and rear), **FAR**s (floor area ratios), maximum heights (**MAXHEIGHT**) and number of stories (**MAXSTORIES**), building coverages (**BLDCOV_MAX**) and lot coverages (**LOTCOV_MAX**) also are in this table..

There is an annotation subclass (ANNO.CODE) which can be used to display the zoning district abbreviations on a map. Annotation will be updated along with coverage attributes.

OVERLAY DISTRICTS

Another library layer called **ZONINGOV** contains overlay districts that appear on the zoning map or are described in the by-law. These data are stored in the QUAD2 library and the coverages are named **OV**. The **OV.PAT** classifies overlay districts by type.

Items in **OV.PAT**:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE
1	AREA	4	12	F
5	PERIMETER	4	12	F
9	OVERLAYS#	4	5	B
13	OVERLAYS-ID	4	5	B
17	POLY-ID	5	5	I
22	FL	7	7	C
29	AE	7	7	C
36	HD	7	7	C
43	AQ	7	7	C
50	HT	7	7	C
57	I	7	7	C
64	WF	7	7	C
71	VG	7	7	C
78	HY	7	7	C
85	WP	7	7	C
92	WC	7	7	C
99	X	7	7	C

Descriptions of Items:

FL	Floodplain
AE	Adult Entertainment
HD	Historic District
AQ	Aquifer Protection
HT	Height Restriction Zone
I	Institutional Overlay
WF	Waterfront DistrictVG Village District
HY	Highway District
WP	Water Protection
WC	Wireless Communication Area
X	Other

In order to make each overlay district code unique, a town-id is concatenated onto the beginning of each overlay code. Thus a flood plain overlay in town 27 would have its FL = 27FL. An overlay in the same town that doesn't fit into the above set of general desriptions would have X = 27X. The .pat is set up this way to allow for a polygon to be in multiple overlay districts simultaneously without using region features and to allow lookup to a table containing detailed description of each overlay district by town.

A table of overlay districts and detail on their requirements will be accessed by relates to the overlay .pat as follows:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
1	OVDIST	7	7	C	-
8	DESC	30	30	C	-
38	REGS	60	60	C	-
98	CITATION	60	60	C	-

Example:

Record	OVDIST	DESC	REGS	CITATION
1	77FL	FLOOD PLAIN	NO DUMPING OR NEW CONSTRUCTION	
2	77AQ	AQUIFER PROTECTION DIST	MAXIMUM WELL DEPTH 50 FEET	
3	304HD1	HISTORIC PRES. DIST A	HISTORICALLY APPROPRIATE SIDING ON OLD BLDGS	
4	304FL	FLOOD PLAIN	NO SOIL REMOVAL OR NEW CONSTR.	

MAINTENANCE

MassGIS maintains this data layer. The availability status of townwide zoning data may be found on the MassGIS web site at http://www.state.ma.us/mgis/st_zon.htm.

DEP DWM Monitoring Stations Datalayer

December 1997

OVERVIEW

The DEP Division of Watershed Management (DWM) Monitoring Stations datalayer represents points on rivers, ponds and lakes where water-quality samples were taken by DWM staff during 1995 and 1996. The datalayer was compiled by DWM and the MA Department of Environmental Protection GIS Group. Most station locations were chosen to support the environmental monitoring phase of the Massachusetts Watershed Initiative. New stations will be added as additional watersheds complete this phase and the related monitoring data pass the DWM quality-control and quality-assurance checks. Monitoring results are stored in related INFO tables described under ATTRIBUTES (below). Data maintained in these tables is reported by the DWM in assessment reports. These are available upon request by contacting the Division of Watershed Management at 508-792-7470. The coverage is stored as a statewide layer. The coverage name is DWM_STAT and library layer is DWM_STATIONS.

MANUSCRIPT

The data layer was created using field descriptions recorded by the staff at the time the samples were taken. These transcriptions were then transferred to 1:24000 or 1:25000 USGS topographic quadrangles. Station identification codes are assigned by DWM and used in the Water Quality Data Database. Tables from the Water Quality Database can be linked with this data layer using the UNIQUE_ID item. Stations in approximately 12 major basins are included in this data layer.

PRODUCTION

Locations recorded on 1:24000 and 1:25000 USGS topographic maps were transferred to a point coverage using on-screen digitizing and registered images of the USGS topographic maps. Watershed teams were consulted to ensure the accuracy of this transferal.

ATTRIBUTES

This data layer has a .PAT with the following items:

UNIQUE_ID	**code corresponding to DWM database**
LONG	**longitude**
LAT	**latitude**

RELATED TABLES

Data generated from surveys conducted by DWM staff are maintained in the four tables listed below.

DWM_STAT.STAID

Station location and identification information. This table contains fields that describe the station. This table is related to the data coverage by use of the UNIQUE_ID field. The UNIQUE_ID is also used to relate to the FIELD table. This table contains one record for each station location. Fields in the STAID Table:

UNIQUE_ID	Unique identifier assigned individual monitoring stations used to relate to point coverage and FIELD table
STATUS	Status of data at time of publication
TYPE	Station type (W=Water Column, D=Discharge Pipe - Not an instream station)
SARIS	Stream and River Identification System code
PALIS	Pond and Lake Identification System Code
WBNAME	Name of water body where the station is located
MILEPT	River Mile up-stream from mouth of river (Mouth is defined as river mile 0.0). Code "-9" are stations at the confluence of rivers
STAID	Station ID assigned and used by Watershed Team
DESCRIPTOR	Detailed description of station location

DWM_STAT.FIELD

Field record of sampling surveys. This table records the date and time that samples were taken in the field as well as information for tracking the sample and quality control and assurance. This table is related to the STAID table by the UNIQUE_ID field (which in turn is linked to the data layer). It is possible to relate the FIELD table directly to the data layer using the UNIQUE_ID field; however, it is not recommended. This table contains one record for each visit to a station during a sampling survey. Most stations are visited more than once. Fields in the Field table:

UNIQUE_ID	Unique identifier assigned Individual monitoring stations used to relate to FIELD table
OWMID	Identifying code assigned to Individual samples. Used to link to both the LAB and HYDRO tables
STATUS	Status of data at time of publication
QAQC	Identifies field QAQC samples (BLANK = Distilled Water Blank, Split samples are indicated by populating this field with the OWMID of the paired sample)
SDEPTH	Depth at which discrete samples are collected for laboratory analysis ONLY. This field is only populated where sampling apparatus allowing collection of samples below the surface has been used
DATE	Date of sample collection
TIME	Time of sample collection in 24-hour format
WDO	Azide modification of Winkler method on grab sample
DTEMP	Temperature, in degrees Celsius, in field using a hand-held thermometer
METER	Meter used for in situ determinations of one or more of the following: depth, temperature, salinity, dissolved oxygen, specific conductivity, and pH. (YSI=Yellow Springs Instruments, HLB=Hydrolab Surveyor II without data logging). Note: Measurements using a Hydrolab Surveyor 3 multiprobe instrument with data logger are maintained in the HYDRO table.
MDEPTH	Depth in meters (m) measured by instrument indicated in the field METER
MTEMP	Temperature in degrees Celsius (°C) measured by instrument indicated in the field METER
MSALINITY	Salinity in parts per thousand (ppt) measured by instrument indicated in the field METER
MDO	Dissolved Oxygen in milligrams per liter (mg/l measured by instrument indicated in the field METER.
MSPECOND	Specific Conductivity (?mhos/cm) measured by instrument indicated in the field METER
MPH	pH in standard pH units (SU) measured by instrument indicated in the field METER

LAB

Results of laboratory analysis of discrete samples collected by DWM staff during a sampling survey and analyzed at the Wall Experiment Station. The LAB table is related to the FIELD table using the OWMID field. This table contains one record for each set of sampling bottles collected at a station and sent to the lab for analysis.

Codes used in populating data into the fields below are:

Results reported less than detection limit are entered as negative values. (i.e. a result of <0.02 is entered as -0.02)

-7 = Interference
-8 = Missing data (i.e. broken bottle, lost sample, censored data)
-9 = Result was reported as a literal zero "0". Null value indicates no data.

OWMID	Identifying code assigned to individual samples. Used to relate to the FIELD table
STATUS	Status of data at time of publication
PH	pH (standard pH units)
ALK	Alkalinity (mg/l)
HARD	Hardness (mg/l)
SPECCOND	Specific Conductivity (?mhos)
CHLORIDE	Chlorides (mg/l)
SSOLIDS	Suspended solids (mg/l)
TSOLIDS	Total solids (mg/l)
TURB	Turbidity (NTU)
TKN	Total Kjeldahl Nitrogen (mg/l)
AMMONIA	Ammonia Nitrogen (mg/l)
NITRATE	Nitrate Nitrogen (mg/l)
TPHOS	Total Phosphorus (mg/l)
EXTBLAB	Yes/No. Indicates if bacteria results are from a lab other than the Wall Experiment Station
TCOLIFORM	Total coliform bacteria (cfu/100 ml)
FECAL	Fecal coliform bacteria (cfu/100 ml)
FECALSTREP	Fecal Streptococci (cfu/100ml)

HYDRO

Results of measurements made in situ using a Hydrolab Surveyor 3 multiprobe instrument with data logger. The HYDRO table is linked to the FIELD table using the OWMID field. This table contains one record for each visit to a station during a survey.

OWMID	Identifying code assigned to individual samples. Used to link to the table
STATUS	Status of data at time of publication
TIME	Time of measurement (Hours:minutes:seconds)
TEMP	Temperature in degrees Celsius (°C)
PH	pH in standard pH units (SU)
SPCOND	Specific conductivity in microsiemens (?S/cm)
DOSAT	Percent dissolved oxygen saturation (%)
DO	Dissolved oxygen (mg/l)
DEPTH	Depth in meters (m)
TURB	Turbidity (NTU)
DATE	Date of measurement

DATALAYER MAINTENANCE

DEP GIS Group and DWM are maintaining this data layer.

MBTA Rapid Transit Datalayer
June 1998

OVERVIEW

This datalayer comprises the four subway and streetcar lines in the Massachusetts Bay Transportation Authority's rapid transit rail network. The four 'T' lines - Blue, Green, Orange, and Red - are represented with linework. Station names are included in nodetext and annotation. The coverage was developed by the Central Transportation Planning Staff (CTPS) and is stored as a single statewide layer called **MBTA**.

PRODUCTION

Original linework was acquired from 1:100,000 USGS Digital Line Graph transportation data, and updates and additions were made by CTPS staff. MassGIS performed further quality checking and updating of the station names. Annotation was created from the STATION item in the node attribute table with the Arcplot ANNOCOVERAGE and NODETEXT commands and textset FONT.TXT, and was sized and placed for optimum cartographic display.

ATTRIBUTES

Each **.AAT** (arc attribute table) has the following items:

SOURCE	5	5	C	-	-	Either DLG or CTPS
LINE	6	6	C	-	-	BLUE, GREEN, ORANGE, or RED
LINE_CO	3	3	I	-	-	Color symbol number

Each **.NAT** (node attribute table) has the following items:

STATION	25	25	C	-	-	Name of T Station
LOT_NUMBER	3	3	I	-	-	First phase of construction, currently incomplete
TYPE	10	10	C	-	-	Surface Green and Red Line trolleys where coded

MAINTENANCE

This datalayer will be updated as needed by the Central Transportation Planning Staff.

Trains Datalayer
June 1998

OVERVIEW

The Central Transportation Planning Staff updated and enhanced railroad linework distributed by the United States Geological Survey (USGS) as 1:100,000 Digital Line Graphs (DLGs). CTPS added several attributes pertaining to type of service, MBTA Commuter Rail status and stations, rail line ownership, and freight and passenger operation. MassGIS distributes these data as a single statewide coverage called **TRAINS**.

The linework is generally excellent, although some railroads are discontinuous (not perfectly edgematched) at USGS 1:100,000 quadrangle boundaries. Other tranportation linework that appears on the USGS 1:100,000-scale maps, such as pipelines and transmission lines, are included in the **TRNSLNS** coverage; please see the Transmission Lines datalayer description for more details.

PRODUCTION

In addition to the new attribute coding mentioned above (see details of tables below), some linework obtained from a variety of sources (see below) was added to the DLGs by CTPS staff. CTPS also created routes and sections from the arcs for the Commuter Rail lines. MassGIS performed quality checking on the data, which included minimal updating of Commuter Rail station names. Using the Arcplot commands ANNOCOVERAGE and NODETEXT, MassGIS created three subclasses of annotation from the STATION item in the node attribute table: ANNO.COMM for large scale maps, and ANNO.LARGE and ANNO.LARGE2 for regional scale maps. In each subclass, Level 1 is for active stations, Level 2 for proposed stations.

ATTRIBUTES

The **TRAINS** arc attribute table (.AAT) includes the following items:

TYPE	2	2	I	-		see Table 1 below
SOURCE	5	5	C	-		see Table 2 below
COMMRAIL	1	1	C	-		see Table 3 below
OWNERSHIP	10	10	C	-		see Table 4 below
FREIGHT_OP	10	10	C	-		see Table 5 below
PASS_OP	11	11	C	-		see Table 6 below
COMM_LINE	40	40	C	-		see Table 7 below
LINE_BRNCH	20	20	C	-	LINE_BRANCH	see Table 8 below
VALPLANNUM	6	6	N	2	VAL_PLAN_NUM	
VALPLANOWN	10	10	C	-	VAL_PLAN_OWN	see Table 9 below

Concatenated code attributes from the original DLG file MAJOR/MINOR pairs, which had been included in an earlier version of this coverage in the item MINOR_NUM, have been dropped from the .AAT.

The **TRAINS** node attribute table (.NAT) includes the following items:

STATION	25	25	C		STATION_NAME	MBTA Commuter Rail Station name
LOT_NUMBER	3	3	I	-		Code not currently used; not reliable
C_RAILSTAT	1	1	C	-	COMMRAIL_STATUS	see Table 3 below
BIKE_TRAIL	40	40	C	-		only Minuteman

The **TRAINS** Route Attribute Table (.RATTRAIN) includes the following items:

TRAIN-ID	4	5	B	-		see Table 10 below
ARCLENGTH	4	12	F	3		
MEASURELEN	4	12	F	3	MEASURELENGTH	
NUMSECTION	4	5	B	-	NUMSECTIONS	
LINE_BRNCH	50	50	C		LINE_BRANCH	

The **TRAINS** Section Table (.SECTRAIN) includes the following items:

ROUTELINK#	4	5	B	-
ARCLINK#	4	5	B	-
F-MEAS	4	12	F	3
T-MEAS	4	12	F	3
F-POS	4	12	F	3
T-POS	4	12	F	3
TRAIN#	4	5	B	-
TRAIN-ID	4	5	B	-
RATIO	4	12	F	3

The following tables detail code descriptions of items.

Table 1 - TYPE (.AAT) Type of service

1	Active
2	Multi use, Active rail and recreation
3	Abandoned Rail Line
4	Abandoned Rail Line in Right of Way in Public Ownership
5	Activity status is unknown
6	Out of Service
7	Recreation, hiking or biking
8	Out of state, to Bradley, Green and Manchester airports.

Table 2 - SOURCE (.AAT) Source of linework

DLG	Original USGS 1:100000 Digital Line Graphs
CTPS	Line work or data items altered by CTPS staff
1890	1890 Topographical maps of Massachusetts (MA publisher)
1938	1938 General Highway Maps (MA DPW publisher)
VPmap	Valuation Section Maps of 1917 of NY,NH&H,and,Central NE Lines and circa. 1970's Boston and Maine Valuation Section Map

Table 3 - COMMRAIL (.AAT) or C_RAILSTAT (.NAT) MBTA Commuter Rail status

Y	Active MBTA commuter line
P	proposed extensions

Table 4 - OWNERSHIP (.AAT) Ownership of line

AMTRAK	AMTRAK
B&M	Boston and Maine
CONRAIL	Consolidated Railroad Corporation
CT	out of state, Connecticut
DEM	MA Department of Environmental Management
EOTC	MA Executive Office of Transportation and Construction
FEDERAL	United States Gov't--DOD and Parks
G&U	Grafton and Upton Railroad
HOUSATONIC	Housatonic Railroad
LOCAL	City or Town
MBTA	Massachusetts Bay Transportation Authority
MDC	Metropolitan District Commission
MTA	Massachusett Turnpike Authority
MWRA	Massachusetts Water Resources Authority
NECR	Northeast Corridor Railroad- AMTRAK
NH	out of state, New Hamphire
P&W	Providence and Worcester Railroad
PI	Private Industry
PRIVATE	Private Owner
PV	Pioneer Valley
RI	out of state, Rhode Island
UTILITY	Utility

Table 5 - FREIGHT_OP (.AAT) Freight Operation

BC	Bay Colony Railroad
CONRAIL	Consolidated Railroad Corporation
CV	Central Vermont Railway
G&U	Grafton and Upton Railroad
HOUSATONIC	Housatonic Railroad
MCR	Massachusetts Central Rail Railroad
P&W	Providence and Worcester Railroad
PV	Pioneer Valley Railroad
QB	Quincy Bay Terminal Company
STRC	Springfield Terminal Railway Company

Table 6 - PASS_OP (.AAT) Passenger Operation

AMTRAK	AMTRAK
AMTRAK	AMTRAK summer line to Cape
AMTRAK/MBTA	AMTRAK and MTBA share service
MBTA	Massachusetts Bay Transportation Authority

Table 7 - COMM_LINE (.AAT) MBTA Commuter Rail line

att-sto	Attleboro/Stoughton Line
fair	Fairmont Line
fitch	Fitchburg/South Acton Line
fram-wor	Framingham/Worcester Line
frank	Franklin Line
hav	Haverhill/Reading Line
low	Lowell Line
ips-roc	Rockport/Ipswich Line
nee	Needham Line

Where more than one line uses same track, separated by commas

Table 8 - LINE_BRNCH (.AAT) Main line or Branch

B&A_WORCESTER
DORCHESTER BRANCH
EASTERN ROUTE
ESSEX BRANCH
FITCHBURG
FRANKLIN
GEORGETOWN BRANCH
GLOUCESTER
KINGSTON BRANCH
MERRIMAC BRANCH
MIDDLEBOROUGH MAIN
MIDDLEBORUOGH LINE
NEEDHAM BRANCH
NEW HAMPSHIRE
NEWBURYPORT BRANCH
PLYMOUTH BRANCH
SALEM & LAWRENCE
SALISBURY BRANCH
SHORE LINE
STOUGHTON BRANCH
WESTERN ROUTE
WILDCAT
WOBURN BRANCH
CHARLES RIVER (FREIGHT)

Table 9 - VALPLANOWN (.AAT) Owner at the time of 1917 Valuation

B&A	Boston and Albany Railroad
B&M	Boston and Maine Railroad
B&P	Boston and Providence Railroad
CHATHAM RA	Chatham Railroad
CV	Central Vermont Railroad
G&U	Grafton and Upton Railroad
MANCHESTER	Manchester Railroad
N&W	Norwich and Worcester Railroad
NYNH&H	New York, New Haven and Hartford Railroad
OLD COLONY	Old Colony Railroad
P&W	Providence and Worcester Railroad
SALEM & LA	Salem and Lawrence Railroad

Table 10 - TRAIN-ID (.RATTRAIN) Dynamic Segmentation Route Attribute Table

Train-id	
1	SHORE LINE
2	NEW HAMPSHIRE
3	FITCHBURG
4	EASTERN ROUTE
5	WESTERN ROUTE
6	GLOUCESTER BRANCH
7	WILDCAT BRANCH
8	DORCHESTER BRANCH
9	NEEDHAM BRANCH
10	B&A WORCESTER
11	MIDDLEBOROUGH MAIN LINE
12	PLYMOUTH BRANCH
13	KINGSTON BRANCH
14	STOUGHTON BRANCH
15	FRANKLIN BRANCH
16	CHARLESRIVER BRANCH
17	BRAINTREE SECONDARY
18	BUZZARDS BAY SECONDARY
19	WEST HANOVER SECONDARY
20	NANTASKET SECONDARY

MAINTENANCE

The Central Transportation Plannig Staff will update the datalayer as needed.

Transmission Lines Datalayer
December 1995

OVERVIEW

The U.S. Geological Survey (USGS) distributes Digital Line Graphs (DLG) from its 1:100,000-scale maps showing pipelines, transmission lines, and other miscellaneous transportation features. MassGIS assembled these data into the statewide coverage **TRNSLNS**, consisting of all the transportation features identified by USGS other than railroads and vehicle roadways and which appear on the 1:100,000 USGS quadrangle sheets.

Although the pipelines and transmission lines appear on maps, they are not necessarily in active use. The linework is generally excellent, although MassGIS has noted that some lines are discontinuous (not perfectly edgematched) at USGS 1:100,000 quadrangle boundaries. Railroad transporation features are included in the **TRAINS** coverage; please see its datalayer description for details.

ATTRIBUTES

The **TRNSLNS** arc attribute table (.AAT) includes the following concatenated code attributes from the original DLG file MAJOR/MINOR pairs:

MINOR_NUM	DESCRIPTION
201	PIPELINE
202	POWERLINE
204	SKI LIFT/TRAMWAY
401	SUBSTATION
403	LANDING STRIP/AIRPORT
201205	PIPELINE ARBITRARY EXTENSION
202205	POWERLINE ARBITRARY EXTENSION

More information about the 1:100,000 DLG files including the major/minor code descriptions can be found in the USGS National Mapping Division publication, *Digital Line Graphs from 1:100,000-Scale Maps*.

Coastal Color Orthophotographs
February 1998

OVERVIEW

The color coastal orthophotographs were generated through a cooperative effort between the Massachusetts Coastal Zone Management Office, the NOAA Photogrammetry Division and the National Geodetic Survey. The data covers most of the coastal zone region. Digital orthophoto production was provided by Photo Science Inc. of Gaithersburg Maryland.

PRODUCTION

The color aerial photography was captured in September and October of 1994 by the Photogrammetry Division of NOAA. The scale of the original photography is 1:48,000. Differential airborne GPS was used for control. Approximately 31 flight lines were conducted, with the orientation of the flight lines designed to cover the maximum area of shoreline. Approximately 360 were captured. Approximately 16 ground panels were placed in the field and surveyed.

Aerotriangulation was conducted by the Photogrammetry Division utilizing analytical stereo plotters. The control was processed using 3 block areas: A) North of Boston, B) Boston south including the Elizabeth Islands, and C) Martha's Vineyard with Nantucket. Control was developed to provide an accuracy that exceeds NMAS of 1:10,000. In large portions of the area, control exceeds the NMAS for 1:7,000.

Diapositives were scanned for a final output resolution of 1.0 meter. Scanning was done to match the diapositives as closely as possible. Bulk radiometric adjustments of the imagery was conducted using Adobe Photoshop "auto levels" to remove the green haze and to stretch the contrast.

Mass point and breakline elevations were created and used in the production. Only mass point elevations are available for the area. Elevation data was developed primarily for the purpose of orthorectification, and not for detailed contouring.

The data set is tiled identically to the MassGIS black and white orthophotos for the mainland region. Data for Martha's Vineyard and Nantucket islands are in the Massachusetts Island State Plane Coordinate Zone. The tiling for the islands is similar to the scheme used on the mainland. The origin of the island zone tile scheme is not based on a mainland grid projected to an island zone. Because the original color orthophotography data development area is not identical to this tiling scheme, portions of some color othrophotograph tiles appear blank. These are inland areas where color orthophotography is not available.

The original 1-meter tiles are 48 MB per tile. 2-meter versions of the tiles are available, and are 12 MB apiece. There are 341 tiles in the mainland, 73 tiles on the island for a total of 414 tiles. The files are stored in TIFF format and are accompanied by .tfw header files.

MassGIS also distributes these images in the MrSID format. MrSID (Multi-resolution Seamless Image Database) is a product of Lizardtech, Inc. that uses wavelet technology to achieve high compression levels within images with minimal loss of image quality. Each one-meter tiff has been compressed at a 20:1 compression ratio with eight zoom levels. Each one-meter SID image is named 1c<sheet-ID>.sid, accompanied by an associated .sdw header file for use in ArcView 3.1 with the MrSID Image Extension. The SID images may also be viewed with the MrSID Image Viewer, available free at http://www.lizardtech.com, or in other software that supports the .sid format.

USGS 1:12,000 Black and White Digital Orthophoto Images

April 1999

OVERVIEW

The U.S. Geological Survey created these orthophotos as part of its National Aerial Photography Program (NAPP). They were post-processed by MassGIS to conform to same tiling scheme and projection as the MassGIS 1:5000 black and white orthophotos. The original products are 1-meter ground resolution, quarter-quadrangle (3.75-minutes of latitude by 3.75-minutes of longitude) images cast on the Universal Transverse Mercator Projection (UTM) on the North American Datum of 1983 (NAD83). The geographic extent of the DOQ is equivalent to a quarter-quad plus an overedge ranging from 50 meters to 300 meters beyond the extremes of the primary (NAD83) and secondary (NAD27) corner points. The overedge was included to facilitate tonal matching for mosaicking and for the placement of the NAD83 and secondary datum corner tics.

PRODUCTION

USGS created raster images by scanning 1:40,000 scale aerial black and white photograph film diapositives with a precision image scanner, using an aperture of approximately 25 to 32 microns. The scanner converted the photographic image densities to gray scale values ranging from 0 to 255. Scan files with ground resolution less than 1 meter or greater than 1 meter but less than 1.28 meters were resampled to 1 meter. All DOQs are cloud free within the 3.75' image area. Source photography was leaf-off in deciduous vegetation regions.

Ground control points in UTM NAD83 were acquired from ground surveys or developed in aerial triangulation models and are third order class 1 or better, and meet National Map Accuracy Standards (NMAS) for 1:12,000-scale. Horizontal and vertical residuals of aerotriangulated tie-points are equal to or less than 2.5 meters. Rectification was accomplished using Digital Elevation Models (DEMs) covering the same area as the scanned image, ground control points, orientation parameters, and a camera calibration report. All data was inspected according to a quality control plan and tested for attribute accuracy, logical consistency, data completeness and horizontal positional accuracy.

MassGIS took the USGS images and mosaicked and projected them to the Massachusetts State Plane Coordinate System, NAD83 Mainland Zone using the ARC/INFO GRID module. The projected grids were clipped to the MassGIS Orthophoto Index and converted to grayscale images. The 1-meter images (15 megabytes each) were resampled for 2- (4 mb) and 5- (640 kb) meter resolution. All three resolution images are stored in tiff format with .TFW header files. The images are named according to their resolution and Orthophoto Index SHEET-ID, separated with the letter 'u' to distinguish them from overlapping 1:5000 orthophotos (example names: 1u125918.tif, 2u125918, 5u125918.tif).

ATTRIBUTES

There are no attribute for the images. Each pixel is coded with a gray-shade value ranging from 0-255. Full metadata on the original USGS product is available from the USGS web site at http://nsdi.usgs.gov/nsdi/wais/maps/doqmet.html.

AVAILABILITY

These images are available for Franklin County and portions of the south shore and Northern Middlesex regions. They will serve as the orthophoto base for the region until the 1:5000 orthos from the Executive Office of Environmental Affairs (EOEA) orthophoto mapping project become availabile. Original dates of photography, obtained from the USGS images' headers, are April 28, 1992 for Franklin County and March or April 1995 for the other regions.

MAINTENANCE

This datalayer is maintained by MassGIS.

Nautical Datalayer
August 1997

OVERVIEW

The nautical datalayer was developed by Photo Science Inc. of Gaithersburg, Maryland for the Massachusetts Coastal Zone Management (MCZM) Program. The datalayer contains 25 feature layers from NOAA nautical charts. Only features represented by line work were extracted. Aids to navigation and bathymetry were not compiled. The data are stored as a single coverage named **NAUTICAL** in the New England (NE) library.

MANUSCRIPT

Thirty three individual NOAA digital nautical charts ranging in scale from 1:5,000 to 1:80,000.

METHODOLOGY

TIFF imagery was imported to ARC/INFO with the IMAGEGRID command. Magenta, Gray, and Black features were extracted with ARCSCAN. Custom editing was conducted to capture or remove features after the ARCSCAN session. Vector editing was conducted using imagery in the background. Topology was generated for each chart with the BUILD LINE option. All charts were APPENDED to a single state-wide coverage. No "rubber sheeting" of data along chart borders was conducted. Features were split on borders of different scale charts, and lower resolution data were removed. Annotation is included.

ATTRIBUTES

The data layer has an .AAT with the following items:

Item Name	Width	Output	Type	Comments
CODE	4	5		B
DESCRIPTION	35	35		C

FEATURES INCLUDED:

0	Unidentified	14	Cable Area
1	Channel Boundary	15	Channel Separation Zone
2	Traffic Lane	16	Disposal
3	COLREGS Demarcation Zone	17	Unexploded Ordinance Area
4	Cable	18	Fish Trap Area
5	Pipeline	19	Safety Zone
6	Sewer Line	20	Spoil Area
7	Three Nautical Mile	21	Area to be Avoided
8	Territorial Sea	22	Anchorage berths
9	Anchorage Area	23	Tunnel
10	Pilot Boarding Area	24	National Wildlife Refuge Area
11	Pipeline Area		
12	Precautionary Area		
13	Prohibited Area		

MAINTENANCE

Currently there are no plans to update this data by MCZM.

Cape Cod Commission Datalayers
August 1998

OVERVIEW

These coverages are the Cape Cod Commission GIS department's datalayers that are the result of data development at the CCC GIS since 1988. These themes, delivered to MassGIS for general distribution statewide, are those most extensively used by the Commission's programs and have been created primarily to support the Commission's Regional Policy Plan and Local Comprehensive Plans with each of the fifteen towns of Cape Cod. These coverages also have value to other agencies, especially the towns that the CCC works for, as well as State and Federal agencies. Some layers used by the CCC and released to MassGIS were digitized from the 1990 Association for the Preservation of Cape Cod (APCC) Atlas.

Three towns on Cape Cod -- Barnstable, Orleans, and Yarmouth -- have their own GIS and have developed many GIS layers. Yarmouth has chosen to maintain control of the distribution of data the town has developed, and has requested that the CCC and MassGIS not redistribute their parcel coverages. Yarmouth should be contacted to obtain copies of its digital data. Files for Yarmouth that are distributed by MassGIS have been developed by the CCC and do not carry this restriction. **The Cape Cod Commission requests that use of any of its coverages or data bases to generate maps, analyses, or reports be followed by a credit to the Cape Cod Commission as the source of the data.**

Some of the coverages are near-duplicates of layers developed by other state agencies, such as public water supplies (Mass. DEP) or anadromous fish runs (Fisheries and Wildlife). MassGIS is releasing both the layers developed by the Cape Cod Commission and those from various state agencies. Users should note the source dates of each layer. Most importantly, layers developed by DEP that may have influence in regulatory matters (i.e. solid waste facilities, zone IIs) may be more complete and should be used instead of those from the Cape Cod Commission.

PRODUCTION

Most of the coverages the Cape Cod Commission provided to MassGIS were digitized from paper maps using a Calcomp 9100 digitizer and ARC/INFO. Source material varies by layer. Some original manuscripts were obtained from the 1990 APCC Atlas; others came from town sources. Other layers were produced with on-screen digitizing in Arcedit. Attribute information for parcel and zoning coverages came from town planning and engineering departments' and assessors' databases. MassGIS performed quality checking on all layers and standardized all attribute tables before creating the libraries.

WHAT MassGIS PROVIDES

MassGIS has populated two ARC/INFO libraries with the CCC datasets. The CAPE library comprises cape-wide or multi-town layers. The CAPETOWN library consists of layers for single towns. The following are lists, with brief descriptions, of each library's layers.

CAPE Library:

LAYER	Description
ALLMWRA4	Cape Cod major marine water recharge areas
APCCPHAB	Cape Cod's endangered plant habitat from 1990 APCC Atlas
APCCVEG	Cape Cod's critical communities and habitat from 1990 APCC Atlas
APCCWET	Cape Cod wetlands from 1990 APCC Atlas
APCCWHAB	Cape Cod's wildlife habitat from 1990 APCC Atlas
BIKE10	Bike paths and routes (1996)
BUSBUFF2	Scheduled bus route buffer for Cape Cod from 1991 Regional Policy Plan
BUSRT2	Capewide bus routes from 1991 Regional Policy Plan
BUSSTAT	Bus stations on Cape Cod
CCNSS	Cape Cod national seashore boundary from parcel maps
CCPARBND	Parcel level coastlines and town boundaries of Cape Cod
CPSVWELL	Cape Cod small volume wells - representing DEP's regulatory definition of "small volume wells"
DGWYAW1	New town boundary along Bass River between Dennis and Yarmouth created from surveyed coordinates
FERRY	Origination points and routes of Cape Cod ferry boats and whale watch boats
FISHRUN2	Anadromous fish runs for Cape Cod
FWRECH9	Fresh water recharge areas for ponds and lakes for Cape Cod - not available for all ponds
INDUSTR5	Cape Cod industrial sites pre-screened in Industrial Land Survey Project of 1994
MAJDUNES	Cape Cod's major dunes from 1990 APCC Atlas
MMRBND1	Outline of Massachusetts Military Reservation (1997)
MMRHWPNT	Mass Military Reservation hazardous waste points
MMRSITES	Mass Military Reservation hazardous waste sites from June 1993 community involvement plan and hazwrap
MMRTOXN7	Mass Military Reservation pollution plumes version 7 (1996)
NEWZOC13	All of Cape Cod's "zones of contribution" for public supply wells - also called wellhead protection areas
OKHWHD96	Old Kings Highway historic district for 1996
PLUME96	Suspected or potential pollution plumes for Cape Cod, mainly from landfills and treatment plants (1996)
PONDBUF	300 foot buffer of ponds from MacConnell 1990 landuse for Cape Cod
PUBWELLS	Public supply wells for Cape Cod - 1996
SCENIC	Department of Environmental Management's Scenic Landscape Inventory for Cape Cod (1990)
SHELFISH	Cape Cod potential shellfish habitat areas - general areas that could support shellfish, not actual locations
VERNAL	Cape Cod vernal pools from 1990 APCC Atlas
VILLAGES	Names of Cape Cod villages and their approximate location
WASTDSP2	Cape Cod waste disposal areas version 2 (from parcel coverages)
WATRDIST	Water resource protection districts for public water supplies
WATRTAB2	Groundwater table contours from USGS ten foot intervals where available
WWTF96	Waste water treatment facilities for 1996 Regional Policy Plan update

CAPETOWN Library:

LAYER	Description
PARCELS	Parcel boundaries and assessor's database information (for all towns except Yarmouth). See chart below for source date of assessor's attributes for each town. Coverage name is PAR.
PIPES	Water supply pipes. Shows streets served by water mains; they do not represent the exact location of the pipes (as in which side of the street they are on). Most of the original scales ranged from one inch = 50 ft. to one inch = 1000 ft. Available for all Cape towns except Eastham, Truro and Wellfleet. Coverage name is PIP.
SEWER	Areas in town with access to sewer system. Available only for Barnstable, Chatham, and Falmouth. Coverage name is SEW.
ZONING	Zoning districts. Available for all Cape Cod towns. Coverage name is ZON.

ATTRIBUTES

CAPE Library:

The following coverages have .PATs or .AATs that contain items other than the standard items.

Items in the **ALLMWRA4.PAT**:

ALT-NAME2	50	50	C	-NAME GIVEN TO THE SYSTEM
GROUPING	5	5	C	-EMBAYMENT OR SYSTEM
ACRES	12	12	I	-DIGITIZED AREA IN FEET DIVIDED BY 43560
NO3DONE	1	1	C	-NITROGEN LOADING CALCULATIONS COMPLETED
WATER	1	1	C	-FIELD USED TO IDENTIFY LAND OR WATER PORTION

Items in the **APCCVEG.PAT**:

VEGTYPE	2	2	C	-	TYPES OF HABITAT CLASSIFIED MAINLY BY VEGETATIVE COVER
ACRES	8	8	N	2	NUMBER OF ACRES CALCULATED FROM THE DIGITIZED AREA

Items in the **APCCWET.PAT**:

HABTYPE	2	2	C	-	TYPE OF WETLAND CLASSIFIED BY VEGETATION
ACRES	8	8	N	2	NUMBER OF ACRES CALCULATED FROM AREA OF DIGITIZED POLYGON

Items in the **BIKE10.AAT**:

TYPE	3	3	C	-	TYPE OF BIKE ROUTE THE LINE IS (Proposed, existing, along street)

Items in the **BUSSTAT.PAT**:

TYPE	10	10	C	-	TYPE OF BUS STATION
SYMB	2	2	C	-	SYMBOL SHOWN ON LRTP MAPS

Items in the **CCNSS.PAT**:

ACREAGE	9	9	N	1	AREA IN ACRES

Items in the **CCPARBND.PAT**:

TOWN	3	3	C	-	TOWN NAME: 3-LETTER USGS DESIGNATION OF TOWN (See below for codes)
ACRES	12	12	N	3	ACRES IN THE POLYGON

Items in the **CPSVWELL.PAT**:

W-TYPE	4	4	C	-	WELL TYPE FOLLOWING DEP DEFINITIONS
SYMBOL	3	3	I	-	ARCPLOT MARKER SYMBOL - REFERS TO A CUSTOM MARKERSET
W-ID	5	5	I	-	IDENTIFICATION NUMBER TO MATCH WITH TABLES ON MAPS AND IN REPORT
TOWN	21	21	C	-	NAME OF TOWN WELL IS LOCATED IN

Items in the **FERRY.PAT**:

SYMB	1	1	C	-	SYMBOL FOR CARTOGRAPHIC PRESENTATION

Items in the **FWRECH9.PAT**:

TYPE	1	1	C	-	DESIGNATIONS FOR LAND, ISLAND OR WATER AREA

Items in the **INDUSTR5.PAT**:

TOWN	2	2	C	-	NAME OF TOWN INDUSTRIAL SITE IS IN
SITE	2	2	I	-	SEPARATE FIELD FOR SITE NUMBER
NAME	8	8	C	-	TOWN NAME ABBREVIATION FOLLOWED BY SITE NUMBER AS LISTED IN SURVEY REPORT

Items in the **MMRHWPNT.PAT**:

TYPE	3	3	C	-	DESIGNATION OF SOURCE OF POLLUTION ASSIGNED BY MILITARY
NUMBER	3	3	I	-	NUMBER OF POLLUTION SOURCE - COMBINES WITH "TYPE"
PREFIX	4	4	C	-	INITIALS OF BRANCH OF MILITARY THAT IS (OR WAS) RESPONSIBLE FOR THE PROPERTY

Items in the **MMRSITES.PAT**:

TYPE	3	3	C	-	DESIGNATION OF POLLUTION SOURCE
NUMBER	3	3	I	-	SPILL NUMBER - USED IN COMBINATION WITH "TYPE"
PREFIX	4	4	C	-	AGENCY RESPONSIBLE FOR PROPERTY WHEN SPILL OCCURED

Items in the **NEWZOC13.PAT**:

INZOC	1	1	C		-USED IN OVERLAY ANALYSIS TO LABEL NEW COVERAGE POLYS THAT ARE "IN THE ZOC"

Items in the **OKHWHD96.PAT**:

ID	6	6	C	-	DISTRICT ID FROM ORIGINAL COVERAGE - NOT MAINTAINED BY CCC
TC	3	3	C	-	TOWN CENTER FROM ORIGINAL COVERAGE - NOT MAINTAINED BY CCC
HN	85	65	C	-	HISTORIC NAME FROM ORIGINAL COVERAGE - NOT MAINTAINED BY CCC
TOWNCODE	8	8	C	-	FROM ORIGINAL COVERAGE - NOT MAINTAINED BY CCC
FORMNO	6	6	C	-	FROM ORIGINAL COVERAGE - NOT MAINTAINED BY CCC
HISTNAME	65	85	C	-	SAME AS HN - FROM ORIGINAL COVERAGE - NOT MAINTAINED BY CCC
PROPCOUNT	9	9	C	-	NUMBER OF PROPERTIES - FROM ORIGINAL COVERAGE - NOT MAINTAINED BY CCC
LHD	6	6	C	-	LOCAL HISTORIC DISTRICT - NOT MAINTAINED BY CCC

Items in the **PONDBUF.PAT**:

INSIDE	4	5	B	-	DESIGNATES THE INSIDE OF THE BUFFER

Items in the **PUBWELLS.PAT**:

ID	4	4	I	-	USGS ID FOR WELL DATA BASE - NOT MAINTAINED BY CCC
NAME	40	40	C	-	WATER DEPARTMENT NAME
CITY	15	15	C	-	TOWN WATER DEPARTMENT WELL IS IN - NOT ALWAYS THE TOWN THE WELL IS IN
MP-IDENTIFIER	15	15	C	-	LATTITUDE-LONGITUDE USED BY USGS TO CREATE THE SITE IN THE ORIGINAL COV.
DESCRIPTION	15	15	C	-	USGS NAME FOR THE WELL - NOT MAINTAINED BY CCC
MP-PERMIT#	9	9	C	-	MASS DEP WELL PERMIT NUMBER - NOT MAINTAINED BY CCC
SOURCE	5	5	C	-	AGENCY RESPONSIBLE FOR REPORTING THE WELL LOCATION IN ORIGINAL COVERAGE
NEW	1	1	C	-	YES (Y) OR NO (N)
TYPE	20	20	C	-	OPERATIONAL STATUS OF WELL
SHORTNAME	12	12	C	-	SHORTENED VERSION OF WELL NAME FOR LABELTEXT ON MAPS
LENS	10	10	C	-	GROUNDWATER LENS NAME

Items in the **SCENIC.PAT**:

LANDSCAPE	11	11	C	-	DEM=S LANDSCAPE CLASSIFICATION
SYMBOL	3	3	I	-	ARCPLOT SHADE SYMBOL ITEM

Items in the **SHELFISH.PAT**:

ISLAND	1	1	C	-	ISLAND POLYGON DESIGNATION
STATUS	1	1	C	-	STATUS OF THE AREA FOR SHELLFISH HARVESTING
ACRES	7	7	N	1	AREA IN ACRES

Items in the **VILLAGES.PAT**:

NAME	15	15	C	-	VILLAGE NAME
HISTORIC	1	1	C	-	IDENTIFIES WHICH VILLAGE IS CONSIDERED HISTORIC

Items in the **WASTDSP2.PAT**:

STATUS	8	4	C	-	STATUS OF SITE
ADDRESS	40	30	C	-	ADDRESS OF SITE
CLOSE-SML	6	6	C	-	
KIND	9	9	C	-	TYPE OF DISPOSAL SITE
ACRES	4	4	I	-	AREA IN ACRES
OWNERSHIP	10	7	C	-	STATUS OF OWNERSHIP
WSID	20	20	C	-	
LTPY85	10	10	I	-	
USE85	8	5	C	-	
REFUSE	1	1	C	-	YES OR NO
DEMOL	1	1	C	-	YES OR NO
STUMPS	1	1	C	-	YES OR NO
ASH	1	1	C	-	YES OR NO
SLUDGE	10	10	C	-	
SUPERFUND	1	1	C	-	
SPEC-WASTE	9	9	C	-	
EXPANSION	19	19	C	-	NO/INTENDED/APPROVED
LEACH-COLL	13	13	C	-	YES OR NO
LINER	1	1	C	-	YES OR NO
MONITOR	13	10	C	-	
CAPPING	20	15	C	-	
TOWN	15	15	C	-	TOWN OF SITE
QUAD	4	4	I	-	USGS QUAD OF SITE
NAME	30	30	C	-	SITE NAME
INZOCRANK	1	1	I	-	
SIZERANK	1	1	I	-	
LEGRAND	20	20	C	-	
LEGZ	4	4	C	-	
DIST-INZOC	6	6	I	-	
DIST-OUTZOC	6	6	I	-	
RISK	6	6	N	2	
RISK-CAT	1	1	I	-	
OUTZRANK	2	2	I	-	
NAME215	15	C	-		
DEPTH-RANK	2	2	I	-	
SIZE-RANK	2	2	I	-	
LINER-RANK	2	2	I	-	
LEACH-RANK	2	2	I	-	
THICK-RANK	2	2	I	-	
STAR	1	1	C	-	
TRANS	2	2	C	-	
RECYC	1	1	C	-	
** REDEFINED ITEMS **					
DEPTH	1	1	I	-	
GRADIENT	1	1	I	-	GRAD-RANK (ALTERNATE NAME)
THICK	2	2	C	-	

Items in the **WATRDIST.PAT**:

LOC	3	3	C	-	LOCATION OF WATER DISTRICT

Items in the **WATRTAB2.AAT**:

INTERVAL	4	5	B	-	CONTOUR ELEVATION IN FEET ABOUVE MEAN SEA LEVEL
LENS	4	4	C	-	NAME OF GROUNDWATER LENS THAT CONTOURS ARE FOR

CAPETOWN Library:

Items in the **PAR.PAT**:

TOWN-ID	3	3	I	Town identification number
GISLINK	7	7	I	Link to assessor's database
TOWN-GIS	10	10	C	Combined TOWN-ID and GISLINK code, used to uniquely identify any parcel across the Cape
MAP	6	6	C	Assessor's map number
BLOCK	8	8	C	Assessor's block number
LOT	22	22	C	Assessor's lot number
STREET_NO	9	9	C	Street address number
STREET_NAME	32	32	C	Street address name
STATECLASS	3	3	I	State class code form assessor's database
ACRES	12	12	N	Assessed parcel size in acres
PD-RD	1	1	C	Identifies polygons that are not parcels: >P= for pond or >R= for road.

Items in the **PIP.AAT**:

DIAMETER	4	4	N	1	Pipe diameter in inches

Items in the **SEW.PAT**:

SEWERED	2	2	C	Whether the polygon is a sewered area (>Y= or >N=)

Items in the **ZON.PAT**:

ZONECODE	10	10	C	-	ZC Zoning designation code
PRIMARYUSE	2	2	I	-	PU Primary use
LANDUSE	1	1	I	-	LU Land use
LASTEDITED	8	8	I	-	Date of last edit
SOURCE	7	7	C	-	Source (>RPA= for all Cape towns)

Source date for CAPETOWN.PARCELS (as listed in Info table $CAPETOWN/database/PAR.PXS):

BARNSTABLE	1996	EASTHAM	1997	PROVINCETOWN	1993
BOURNE	1995	FALMOUTH	1994	SANDWICH	1993
BREWSTER	1996	HARWICH	1993	TRURO	1993
CHATHAM	1996	MASHPEE	1994	WELLFLEET	1989
DENNIS	1993	ORLEANS	1996	YARMOUTH	No parcels data

RELATED TABLES

In order to preserve all original attribute information as originally developed by either the towns or the Cape Cod Commission, the polygon attribute tables for the parcels and zoning layers are available as related INFO tables in the $CAPETOWN/database directory. Because the items differ among the original .PATs, these tables can be used to relate to individual coverages rather than the library as a whole, based on the '-ID' items. Two sets of tables exist: the original parcel .PATs are named according to their three-letter character designations given to the towns of Cape Cod by the USGS plus the letters 'PAR' along with a '.PRT' extension. Original zoning .PATs have the three-letter code with 'ZON' and a '.PRT' extension. Relates also can be set up using another INFO table in $CAPETOWN/database - TOWNCODE.DAT, which contains the three-letter USGS code ('CAPECODE'), town and town-id.

TOWNCODE.DAT is as follows:

CAPECODE	TOWN	TOWN-ID
A1W	BARNSTABLE	20
BHW	BOURNE	36
BMW	BREWSTER	41
CGW	CHATHAM	55
DGW	DENNIS	75
EGW	EASTHAM	86
FSW	FALMOUTH	96
HJW	HARWICH	126
MW	MASHPEE	172
OSW	ORLEANS	224
PZW	PROVINCETOWN	242
SDW	SANDWICH	261
TSW	TRURO	300
WNW	WELLFLEET	318
YAW	YARMOUTH	351

As an example of the original .PATs, the original parcel .PAT for Barnstable is named A1WPAR.PRT.

Original metadata for the $CAPETOWN library created by the Cape Cod Commission are stored as Info files in directories under the $CAPETOWN/database directory (parmeta, pipmeta, sewmeta, and zonmeta). These files are named according to the three-letter CAPECODE and have a .CCC extension. The original .DOC, .PAD, .PAC, .AAD, and .AAC files, if available, are stored here as well. Original metadata (with the .CCC extension) for the $CAPE library are stored as Info files in $CAPE/database. Some of these .CCC files may mention 'NAD27' or 'stateplane feet,' referring to original datums. All data from the Cape Cod Commission have been projected into Mass. State Plane NAD83 meters.

MAINTENANCE

MassGIS is not maintaining these data. Future updates of any of these layers will be done by the Cape Cod Commission GIS staff prior to subsequent release by MassGIS. For current status of any of the aforementioned datasets please contact Gary Prahm, GIS Manager at the Cape Cod Commission, at (508) 362-3828. For more information on the Cape Cod Commission, visit its site on the world wide web at http://www.vsa.cape.com/~cccom/.

Massachusetts Highway Department Major Roads Datalayer
November 1998

OVERVIEW

This datalayer represents the "major roads" in the Commonwealth from the Massachusetts Highway Department (MHD) Roads datalayer. Four classes of road are included: Limited Access Highways (such as Interstates with on- and off-ramps as the only means of access), Multi-lane Highways without limited access, Other Numbered Highways (such as state and Federal routes that are not included in the previous two categories), and Major Road-Connectors (non-numbered routes that connect numbered routes). These major roads are stored as one statewide coverage; the coverage name is MAJRDMHD and the STATE library layer name is MAJ_RD_MHD.

Another statewide layer, MHDRDPTS, is a point coverage that may be used for plotting route shields that have the look of those on actual highway signs (i.e. red, white and blue Interstate; U.S. shields; boxes for State routes). To plot these using Arcplot, use the markerset solidshld.mrk; a special font fnt029 must be located either locally or in the $archome/igl63exe directory. Issue the pointmarkers command and use the RT-ID (route number) or ART-ID (alternate route number) item, which matches the appropriate symbol in the solidshld.mrk markerset.

A third related statewide layer, EXITS, is a point coverage that includes the location and ID number of major highway interchanges.

ATTRIBUTES

Please refer to the digital metadata files for a complete listing of item descriptions and attributes.
The .AAT contains the following items:

CLASS: Used to designate a road based on functional classification and access; used for plotting
Classes are:
1 - Limited Access Highway
2 - Multi-lane Highway, not limited access
3 - Other numbered route
4 - Major road - connector

ADMIN_TYPE Based on AUTO-RT-SIGN from MRD.INV road inventory file
Types are:
1 - Interstate 2 - U.S. Federal 3 - State 4 - Major Road-Connector

Roads with more than one sign type are preferenced in the above order.

RT-NUMBER	Principal route number of the road type listed in ADMIN_TYPE
LANES	Number of lanes on other side of divided highway; values greater than 1 indicate the road is divided; used in the coding of the CLASS item
ALT-RT-NUMBER	Route number of the road type listed in ALT-ADMIN_TYPE
ALT-ADMIN_TYPE	Alternate ADMIN_TYPE by ADMIN_TYPE hierarchy listed above
MARKER	For plotting purposes

** REDEFINED ITEMS **

RT-POS1	The following seven items separate the characters in the RT-NUMBER item for plotting purposes.
RT-POS2	
RT-POS3	
RT-POS4	
RT-NUMBER3	
RT-NUMBER2	
RT-NUMBER1	
DIS-ITEM	Concatenation of CLASS, ADMIN_TYPE, and RT-NUMBER

The MHDRDPTS.PAT contains the following items:

RT-NUMBER	4	4	C	-	RTNO	Route Number
ALT-RT-NUMBER	4	4	C	-		Alternate Route Number
RT-ID	4	4	I	-		Markerset symbol number for RT-NUMBER
ART-ID	4	4	I	-		Markerset symbol number for ALT-RT-NUMBER
MARKER	3	3	I	-		Code for scale dependency when plotting markers
FUNC-CLASS	1	1	I	-		Functional class for road of RT-NUMBER, from MHD

The EXITS.PAT contains the following items:

INTMARK-ID	4	5	B	-	Markersymbol number in custom markeset used for plotting
ROUTE	4	4	C	-	Route Number of major highway on which the exit is located

MAINTENANCE

MassGIS and MHD are maintaining this layer.

Massachusetts Highway Department Roads Datalayer
November 1998

OVERVIEW

This datalayer represents linework from the USGS 1:100,000 Roads Digital Line Graphs (DLGs) with additional linework from the Massachusetts Highway Department (MHD). Many of the new roads were provided to MHD by municipalities on various town-scale maps. Also, MHD made edits to existing DLG features. In addition, this layer includes extensive attribute information maintained by the MHD which has been llinked to all features.

Eventually the linework in this datalayer will be replaced with 1:5,000 road centerlines that are being interpreted as part of the Digital Orthophoto development project. The MHD inventory and street attribute data will then be attached to the larger-scale mapping.

The MHDROADS layer is stored in the QUAD library. Coverages are tiled by 7.5-minute USGS Quad sheets and are named MRD.

PRODUCTION

MassGIS received the Yearend 1997 MHD Road Inventory Data from the Bureau of Transportation Planning and Development and, in cooperation with the Department of Environmental Protection GIS Group, further processed the data to facilitate display, particularly in the MassGIS Data Viewer. Processing included: creating a classification scheme for plotting roads based on functional class and access control and adding the item CLASS to the arc attribute table (.aat) (see details below); adding the items STREET_NAME, LANES, and RT-NUMBER to the .aat; building routes for the items CSN, CITY_RIN_H, STREET_NAME, LANES, ROUTE, and ADMIN_TYPE; straightening the linework with the Arcedit STRAIGHTEN command, which eliminates most dimpled arc intersections; and building five subclasses of annotation (MAJOR2, MAJOR, LARGE, MEDIUM, and SMALL) which may be used for displaying street names depending on scale. In Arcplot use textset font prior to issuing the annotext command.

ATTRIBUTES

Please refer to the digital metadata files for a complete listing of item descriptions and attributes. The .AAT contains the following items:

COUNTY-CODE:	County Code			
	A =	Barnstable	H =	Hampshire
	B =	Berkshire	I =	Middlesex
	C =	Bristol	J =	Nantucket
	D =	Dukes	K =	Norfolk
	E =	Essex	L =	Plymouth
	F =	Franklin	M =	Suffolk
	G =	Hampden	N =	Worcester
SERIAL_NUMBER:	Used to uniquely identify a roadway segment within a given county			
CLASS:	Used to designate a road based on functional classification and access; used for plotting			
	Classes are:			
	1 - Limited Access Highway		5 - Minor street or road	
	2 - Multi-lane Highway, not limited access		6 - Minor street or road	
	3 - Other numbered route		7 - Track (from USGS DLGs)	
	4 - Major road - connector		8 - Trail (from USGS DLGs)	
ADMIN_TYPE	Based on AUTO-RT-SIGN from MRD.INV file			
	Types are:			
	1 - Interstate 2 - U.S. Federal 3 - State 0 - Local road			
	Roads with more than one sign type are preferenced in the above order.			
RT-NUMBER	Route number of the road type listed in ADMIN_TYPE			
STREET_NAME	Street name from the MRD.STREETS file (see details of this INFO table below)			
LANES	Number of lanes on other side of divided highway; values greater than 1 indicate the road is divided; used in the coding of the CLASS item			
** REDEFINED ITEMS **				
CSN:	County Code + Serial Number Used to uniquely identify any roadway segment within the entire state			
	Note: This item is the link to the road inventory file (mrd.inv)			

RT-POS1	The following seven items separate the characters in the RT-NUMBER item for plotting purposes.
RT-POS2	
RT-POS3	
RT-POS4	
RT-NUMBER3	
RT-NUMBER2	
RT-NUMBER1	

The items for descriptions of street listings in the related file MRD.STREETS are:

CITY_NUM:	City or Town Number Abington = 1 ... Yarmouth = 351
RIN:	Road Inventory Number. Used to uniquely identify any road within a given town
STREET_NAME:	Street Name with Suffix
FRM-ST-NUM:	From RIN
FRM-ST-NAME:	From RIN name. Refers to either a road, a town or state line, a dead end, private property, or a cul-de-sac.
TO-ST-NUM:	To RIN
TO-ST-NAME:	To RIN name. See item FRM-ST-NAME for description
CITY_RIN_H:	City or Town Number + Road Inventory Number (RIN). Used to uniquely identify any road within the entire state ***Note: This item is the link to the road inventory file (mrd.inv)***
OUTPUT	All fields

The MRD.INV file stores information on the road inventory. The items are:

1 CITY_NUM: City or Town Number Abington = 1 ... Yarmouth = 351

2 RIN: Road Inventory Number. Uniquely identifies each road within a given town

3 FRM-ST-NUM: From Road Inventory Number (RIN)

xxxx	=	RIN
Xxxx	=	Bordering town line, where X=1st letter of bordering town name and xxx=CITY_NUM
0000	=	Dead end
00CT	=	CT state line
00NH	=	NH state line
00NY	=	NY state line
00RI	=	RI state line
00VT	=	VT state line
8888	=	Private property
9999	=	Cul-de-sac

Note: From and To Road Inventory Number are for the entire road (RIN), not for the road segment (SERIAL_NUMBER).

4 TO-ST-NUM: To Road Inventory Number (RIN)
See item # 3 (FRM-ST-NUM) for description

5 ADMIN_SYS: Administrative System

1	=	Massachusetts Highway Department
2	=	City or town accepted road
3	=	Metropolitan District Commission
4	=	Massachusetts Turnpike Authority
5	=	Massachusetts Port Authority
6	=	State Park or Forest
7	=	State institutional
8	=	Federal Park or Forest
9	=	County Institutional
0	=	Unaccepted by city or town
B	=	State college or university
C	=	US Department of Defense
D	=	US Army Corps of Engineers
E	=	Federal Institutional
F	=	Other Federal
G	=	Federal Bureau of Indian Affairs
H	=	Miscellaneous Bridges

6 FEDAID_SYS: National Highway System (NHS) Status

0	=	Not on NHS
1	=	NHS - Interstate
2	=	NHS - Strategic Defense Highway System (STRAHNET)
3	=	NHS - STRAHNET Connector
4	=	NHS - Other
5	=	NHS - Other - One-way pair
6	=	NHS - Other truck route exclusion
7	=	NHS connection to major intermodal terminal (proposed)

7 FEDAID-RT-NUM: Federal-Aid Route Number

8 FEDAID-UR-DESIG: Federal-Aid Urban/Rural Designation

1	=	Urban city
2	=	Urban town
5	=	Rural town

Note: A town may be partially urban and partially rural.

9 FUNC-CLASS: Functional Classification

0	=	Local
1	=	Interstate
2	=	Rural principal arterial and Urban extensions
3	=	Rural minor arterial and Urban extensions
4	=	Other Urban principal arterial

5 = Urban minor arterial or Rural major collector
6 = Urban collector or Rural minor collector
Note: Use urban/rural designation to interpret functional classification.

10 AUTO-RT-NUMBER: Auto Route Number
Interstate, US Highway, or State Numbered Highway route number
Note: If multiple routes exist on a section, the lowest number on the highest system is recorded (Interstate>US>State);
Other routes under hierarchy are listed in Item # 11 (ALT-RT-NUMBER).

11 ALT-RT-NUMBER: Alternate Route Number(s)
All other routes under hierarchy of Item # 10
Note: Field begins and ends with a "+", and routes are separated by "+"s.

12 D-SH-WID: Left Side Right Shoulder Width for DIVIDED Roadway Only
Note: Width in feet.

13 D-SH-TYP: Left Side Right Shoulder Type for DIVIDED Roadway Only
S = Stable - Unruttable compacted subgrade
U = Unstable shoulder
H = Hardened bituminous mix or penetration
Note: Null = no left side right shoulder OR not a divided roadway OR no data.

14 DIV-L-SU-WID: Left Side Surface Width of Travel Lanes for DIVIDED Roadway Only
0 = Not a divided roadway OR no data.
Note: Width of traveled way in feet, excluding shoulders/auxiliary lanes.

15 MED-WID: Median Width for DIVIDED Roadway Only
0 = Not a divided roadway OR No data
Note: Width in feet; coded as 99, if over 100 feet.

16 DIV-L-NUM-TR-LA: Left Side Number of Travel Lanes for DIVIDED Roadway Only
0 = Not a divided roadway OR No data

17 CURBS: Curbs
0 = None
1 = Left side only
2 = Right side only
3 = Both sides
4 = Along median only
5 = All curbs (divided highway)
Note: For urban sections only.

18 L-SW-WID: Left Sidewalk Width
0 = No left sidewalk OR No data
Note: For urban sections only; Width in feet.

19 R-SW-WID: Right Sidewalk Width
0 = No right sidewalk OR No data
Note: For urban sections only; Width in feet.

20 STREET-OPERATION: Street Operation
0 = No data
1 = One-way traffic
2 = Two-way traffic

21 L-SH-WID: Median Shoulders Width for DIVIDED Roadway OR Left Shoulder Width for UNDIVIDED Roadway
Note: Width in feet; for DIVIDED roadways, median shoulders are assumed to have the same width.

22 L-SH-TYPE: Median Shoulders Type for DIVIDED Roadway OR Left Shoulder Type for UNDIVIDED Roadway
See item # 14 (D-SH-TYP) for description
Note: For DIVIDED roadways, median shoulders are assumed to have the same type.

23 SUR-WID: Right Side Surface Width for DIVIDED Roadway OR Surface Width for Entire UNDIVIDED Roadway
0 = No data
Note: Coded as 99, if over 100 feet; Measurement of travelled way, excluding shoulders/auxiliary lanes.

24 SUR-TYP: Surface Type of Either DIVIDED or UNDIVIDED Roadway
0 = No data
1 = Unimproved, graded earth, or soil surface road
2 = Gravel or stone road
3 = Brick road
4 = Block road
5 = Surface-treated road
6 = Bituminous concrete road
7 = Portland cement concrete road
8 = Composite road; flexible over rigid
9 = Composite road; rigid over flexible or rigid over rigid ('white topping')
Note: For both DIVIDED and UNDIVIDED roadways.

25 R-SH-WID: Right Side Right Shoulder Width for DIVIDED Roadway OR Right Shoulder Width for UNDIVIDED Roadway
Note: Width in feet.

26 R-SH-TYP: Right Side Right Shoulder Type for DIVIDED Roadway OR Right Shoulder Type for UNDIVIDED Roadway
See Item # 14 (D-SH-TYP) for description

27 UNDIV-RRWY-#TRLA: Right Side Number of Travel Lanes for DIVIDED Roadway OR Total Number of Travel Lanes for UNDIVIDED Roadway
0 = No data

28 ACC_CON: Access Control

0	=	No control
1	=	Full control
2	=	Partial control

29 TERRAIN: Terrain

0	=	No data
1	=	Level
2	=	Rolling
3	=	Mountainous

30 ROW-WID: Right of Way Width

0 = No data

Note: Width in feet.

31 SPEED_LIMIT: Speed Limit

0 = No data

Note: Speed limit in miles per hour.

32 ODOM-READ: Cumulative Odometer Reading

Note: In hundredths of a mile (xx.xx); This value does not represent section length.

33 URB-AREA: Urbanized Area

URBANIZED AREAS

A =	Boston	H =	Pittsfield
B =	Brockton	I =	Providence-Pawtucket
C =	Fall River	J =	Springfield
D =	Fitchburg-Leominster	K =	Worcester
E =	Lawrence-Haverhill	L =	Taunton
F =	Lowell	M =	Hyannis
G =	New Bedford		

SMALL URBAN AREAS

1 =	Athol	R =	Plymouth
5 =	Spencer	S =	Greenfield
6 =	Ware	U =	Southbridge
O =	North Adams	V =	Clinton-Lancaster
Q =	Gardner-Templeton		

Note: If NULL, roadway section is in RURAL area.

34 HPMS-CODE: HPMS (Highway Performance Monitoring System) Code

0	=	Not an HPMS section nor on a road that has an HPMS section
1	=	Not an HPMS section but is on a road that has an HPMS section
2	=	An HPMS section - special "sample" sections that require additional data (# of railroad crossings, percentage of truck traffic, etc.)

35 AUTO-RT-SIGN: Auto Route Signing

0	=	Roadway is not signed as a numbered auto route
1	=	Roadway is signed as an Interstate route
2	=	Roadway is signed as a US Highway route
3	=	Roadway is signed as a State route

Note: System hierarchy in Item # 10 (AUTO-RT-NUMBER) is used.

36 SPECIAL_FUN: Special Systems

0	=	Not an addition to the Interstate system
1	=	Addition to Interstate system (23 U.S.C. 139(c))
2	=	Addition to Interstate system (23 U.S.C. 139(a))-approved before March 9, 1984
3	=	Addition to Interstate system (23 U.S.C. 139(a))-approved on or after March 9, 1984

Note: Used to identify Special Highway System Categories.

37 MEDIAN_TYPE: Median Type for DIVIDED Roadway Only

0	=	None
1	=	Curbed
2	=	Positive barrier
3	=	Unprotected

38 TYPE_URB_LOC: Urban Location

0	=	Not applicable (i.e., not a principal arterial nor in an urbanized area)
1	=	Central Business District (CBD)
2	=	High density business/commercial center (excluding CBD)
3	=	Low density commercial
4	=	High density residential (5,000 or more persons per square mile)
5	=	Low density residential (less than 5,000 persons per square mile)
6	=	Other urban area, including undeveloped land

39 TOLL_RD: Toll

1	=	Not a toll road
2	=	A toll road

40 COUNTY-CODE: County Code

A	=	Barnstable	H	=	Hampshire
B	=	Berkshire	I	=	Middlesex
C	=	Bristol	J	=	Nantucket
D	=	Dukes	K	=	Norfolk
E	=	Essex	L	=	Plymouth
F	=	Franklin	M	=	Suffolk
G	=	Hampden	N	=	Worcester

41 SERIAL_NUMBER: Serial Number

Uniquely identifies each roadway segment within a given county

42 CSN_H: County Code + Serial Number (with blanks)
Uniquely identifies each roadway segment within the entire state
Note: This item is the link to the section length file (MRD.FEET), the town-level and statewide coverages (MRDxxx's), and the arc length file (MRD.LENGTH).

43 CSN_ZF: County Code + Serial Number (zero filled)
Uniquely identifies each roadway segment within the entire state
Note: This item is the link to the section length file (MRD.FEET), the town-level and statewide coverages (MRDxxx's), and the arc length file (MRD.LENGTH).

44 CITY_RIN_H: City or Town Number + Road Inventory Number (zero filled)
Uniquely identifies each road within the entire state
Note: This item is the link to the street listing file (MRD.STREETS).

The MRD.FEET file stores information on the road inventory section lengths. The items are:

1 ODOM-READ: Cumulative Odometer Reading
Note: In hundredths of a mile (xx.xx); This value does not represent section length (see below)

2 OD-LENGTH: Section Length (in hundredths of a mile)
Note: In hundredths of a mile (xx.xx).

3 FT: Section Length (in feet)

4 CSN_ZF: County Code + Serial Number (zero filled)
Uniquely identifies each roadway segment within the entire state
Note: This item is the link to the road inventory file (MRD.INV), the town-level and statewide coverages (MRDxxx's), and the arc length file (MRD.LENGTH).

5 CSN_H: County Code + Serial Number (with blanks)
Uniquely identifies each roadway segment within the entire state
Note: This item is the link to the road inventory file (MRD.INV), the town-level and statewide coverages (MRDxxx's), and the arc length file (MRD.LENGTH).

The MRD.LENGTH file stores information on the road inventory arc lengths. The items are:

1 FREQUENCY: Number of arcs assigned to the particular CSN
Note: Only arcs with arc-id less than 60,000 are included

2 LENGTH: Total length of arcs in meters assigned to the particular CSN
Note: Only arcs with arc-id less than 60,000 are included

3 CSN_ZF: County Code + Serial Number (zero filled)
Uniquely identifies each roadway segment within the entire state
Note: This item is the link to the road inventory file (MRD.INV), the town-level and statewide coverages (MRDxxx's), and the arc length file (MRD.LENGTH).

4 CSN_H: County Code + Serial Number (with blanks)
Uniquely identifies each roadway segment within the entire state
Note: This item is the link to the road inventory file (MRD.INV), the town-level and statewide coverages (MRDxxx's), and the arc length file (MRD.LENGTH).

MAINTENANCE

MassGIS and MHD are maintaining this layer.

Appendix I

Guide to the MassGIS Data Library

THE MASSGIS DATA LIBRARY SCHEME

Library	Layer	Coverage	What is it?
Town	LANDUSE	LUS	Land Use - 1985/1990/1991
	OPENSPACE	OSP	Open Space
	TIGER	TIG	Census Tiger Lines (Roads)
Quad	COAST	CS	1:25,000 Coastline
	HYDRO	HD	1:25,000 USGS Hydro
	Q3FLOOD	Q3	FEMA Flood Data
	MHDROADS	MRD	Mass Hwy Dept Roads
	T5	T5	Title 5 Setback Areas
Quad2	SOILS	SOI	Soil Types
	SOILSPOT	SPO	Soil Spot Features
	ZONING	ZN	Municipal Zoning Districts
	ZONINGOV	OV	Zoning Overlay Districts
Basin	AQUIFERS	AQ	Aquifers
	CONTOURS250	HP250K	1:250,000 Contours
	HD100	HD100_	1:100,000 Hydro
	SUB_BASINS	SUBBAS	Sub-basin Boundaries
	SURF_GEOLOGY	GEO	Surficial Geology
OQ	ANNO_OQ	AN	Orthophoto Annotation
	CONTOURS	HP	Orthophoto 3-meter Contours
	STREAMS	S	Orthophoto 1:5,000 Streams
	WETLANDS	W	Orthophoto 1:5,000 Wetlands
OQE	BREAKLINES	L	Orthophoto Breaklines
	ELEVATIONS	P	Ortho Point Elevations
			*** Above 2 not distributed on standard CD Set **
State	AB_CRAN	AB_CRAN	Abandoned Cranberry Bogs
	ACECS	ACECS	Areas of Critical Environ. Concern
	AQUEDUCTS	AQUEDUCT	Aqueducts
	AQ_SOLE	AQ_SOLE	Sole Source Aquifers
	BARRIERB	BARRIERB	Barrier Beaches
	BOUNDARY	BOUNDARY	Town Municipal Boundaries (no coast)
	CANOEACCESS	RIVRECPT	Canoe Access Points
	CANOETRIPS	RIVTRIP	Canoe Trips
	CBRS	CBRS	Coastal Barrier Resource Units
	CIR93	CIR93	Color Infrared Flight Lines
	CONGRESS	CONGRESS	Congressional Districts
	COUNTIES	COUNTIES	Counties
	COUNTYNC	COUNTYNC	Counties (no coast)
	CSTZONE	CSTZONE	Mass. Coastal Zone
	CZMSHEET	CZMSHEET	CZM Sheet Index
	DWM_STAT	DWM_STAT	DEP Water Monitoring Stations
	EXITS	EXITS	Highway Exit Locations
	FIRMAOV	FIRMAOV	FEMA FIRM Zones V and AO
	GAGES94	GAGES94	Stream-Gaging Stations
	GWP	GWP	Ground Water Discharge Points
	HOUSE93	HOUSE93	House Districts
	IWPA	IWPA	Interim Wellhead Protection Areas
	IWPACOM	IWPACOM	IWPA for Community Wells
	LANDMARK	LANDMARK	Landmarks

Library	Layer	Coverage	What is it?
State *(continued)*	**MAJ_BAS**	**MAJ_BAS**	Major Basin Boundaries
	MAJ_POND	**MAJ_POND**	Major Ponds
	MAJ_RD_MHD	**MAJRMHD**	Major Roads (from Mass Hwy Dept)
	MAJ_STRM	**MAJ_STRM**	Major Streams
	MHDRDPTS	**MHDRDPTS**	Points for plotting road shields
	NPDWSACC	**NPDWSACC**	Cape Non-Potential Drinking Water Areas
	OQISLE	**OQISLE**	OQ Index - Islands
	OQMAIN	**OQMAIN**	OQ Index - Mainland
	ORW	**ORW**	Outstanding Resource Waters
	OUTLINE	**OUTLINE**	State Outline (100k coast)
	OUTLINE25	**OUTLN25**	State Outline (25k coast)
	PAB	**PAB**	Public Access Boards
	PWS_DEP	**PWS_DEP**	Public Water Supplies
	QUADS	**QUADS**	Quadrangle Sheets
	REG_DEM	**REG_DEM**	DEM Regions
	REG_DEP	**REG_DEP**	DEP Regions
	RPAS	**RPAS**	Regional Planning Authorities
	SENATE93	**SENATE93**	Senate Districts
	SOILINDEX	**SOILINDX**	Soil Survey Sheet Index
	STELLBNK	**STELLBNK**	Stellwagen Bank Nat. Marine Sanctuary
	SW	**SW**	Solid Waste Facilities
	TOWNS	**TOWNS**	Town Boundaries (with coast)
	TRAINS	**TRAINS**	Trains
	TRANSLINES	**TRNSLNS**	Transmission Lines
	USGSGRID	**USGSGRID**	Digital Quadrangle Sheets
	UST	**UST**	Underground Storage Tanks
	UTMGRID	**UTMGRID**	UTM Grid
	UTMPOINT	**UTMPOINT**	UTM Points
	ZONEA	**ZONEA**	Zone A Surface Water Area
	ZONEB	**ZONEB**	Zone B Surface Water Area
	ZONEC	**ZONEC**	Zone C Surface Water Area
	ZONE_IIS	**ZONE_IIS**	DEP Approved Zone IIs
NE	**10MINLL**	**10MINLL**	Ten-Minute Latitute/Longitude Grid
	1MINLL	**1MINLL**	One-Minute Latitute/Longitude Grid
	ANADFISH	**ANADFISH**	Anadromous Fish
	ATLNPROV	**ATLNPROV**	Atlantic Provinces
	CTTOWNS	**CTTOWNS**	Connecticut Towns
	DSGA	**DSGA**	Designated Shellfish Growing Areas
	GEONAMES	**GEONAMES**	Geographic Annotation
	GRID10K	**GRID10K**	MA Stateplane Grid and Points
	METOWNS	**METOWNS**	Maine Towns
	NAUTICAL	**NAUTICAL**	NOAA Chart Major Linework
	NEWENGLAND	**NEWNGLND**	NE States
	NE_MASK	**NE_MASK**	States Bordering Mass.
	NHTOWNS	**NHTOWNS**	New Hampshire Towns
	NYTOWNS	**NYTOWNS**	New York Towns
	OFFSH80K	**OFFSH80K**	Offshore Town Boundaries
	RITOWNS	**RITOWNS**	Rhode Island Towns
	SANCTUARY	**SANCT**	Federal & State Marine Sanctuaries
	SEA_MASK	**SEA_MASK**	Ocean Off Mass. Coast
	SHLFSHST	**SHLFSHST**	Shellfish Sampling Stations
	VTTOWNS	**VTTOWNS**	Vermont Towns